Air Emissions

Internal Combustion Engines - Reciprocating - Diesel

Date:

1 **Company Name:**
Facility Name:
Equipment Name:

2 **Enter** Rated Mechanical Output (hp) . . . . . .

3 **Enter** Sulfur Content of Diesel Fuel . . . . . .

4 **Enter** Number Hours Operated per Year . . . . . .

The calculated emissions will be :

Emission Factors listed below are for **DIESEL Engines . . . . . .**

	c	d	
Pollutant	**Emission Factor**	**Emission Rate**	**Emissions**
	(lbs/hp-hr)	(lbs/hr) [c x hp Rating]	(tons/yr) [d x hr/2000]
Particulate Material - PM_{10}			
Sulfur Dioxide - SO2			
Nitrogen Oxides - NO_x			
Volitile Organic Compounds - VOC			
Carbon Monoxide - CO			

Note: This calculation chooses the correct set of emission factors, from the table below, based on the engine horsepower. The correct emission factor will automatically be choosen to match the horsepower input. Each engine must have it's own calculation, do **not** total the horsepower for the site and use the total for emission calculations.

Kilowatt-hour to Horsepower Conversion
Horsepower is equal to Kilowatt-hour times 1.34, or HP = 1.34 x kWh
To convert Enter kWh here:
kWh =
HP =
Enter in the "Rated Mechanical Output (hp)" (Cell E8) Above

Air Emissions

Internal Combustion Engines - Reciprocating - Diesel

Date: 0-00-00

1	**Company Name:**	**Test**
	Facility Name:	**test**
	Equipment Name:	**Admin E Generator**
2	**Enter** Rated Mechanical Output (hp)	**400**
3	**Enter** Sulfur Content of Diesel Fuel	**0.05**
4	**Enter** Number Hours Operated per Year	**20**

The calculated emissions will be :

Emission Factors listed below are for **DIESEL Engines . . . . . .**
Less Than 600 hp

	c	d	
Pollutant	**Emission Factor**	**Emission Rate**	**Emissions**
	(lbs/hp-hr)	(lbs/hr) [c x hp Rating]	(tons/yr) [d x hr/2000]
Particulate Material - PM_{10}	0.0022	0.880	**0.0088**
Sulfur Dioxide - SO2	0.00205	0.820	**0.0082**
Nitrogen Oxides - NO_x	0.031	12.400	**0.1240**
Volitile Organic Compounds - VOC	0.002514	1.006	**0.0101**
Carbon Monoxide - CO	0.00668	2.672	**0.0267**

Note: This calculation chooses the correct set of emission factors, from the table below, based on the engine horsepower. The correct emission factor will automatically be choosen to match the horsepower input. Each engine must have it's own calculation, do **not** total the horsepower for the site and use the total for emission calculations.

Kilowatt-hour to Horsepower Conversion
Horsepower is equal to Kilowatt-hour times 1.34, or HP = 1.34 x kWh
To convert Enter kWh here:
kWh = 200
HP = 268
Enter in the "Rated Mechanical Output (hp)" (Cell E8) Above

Air Emissions
Internal Combustion Engines - Reciprocating - Diesel

Instructions

These calculation sheets have been written using Microsoft Excel.
To change the information (name, horsepower, operating hours) select the cell (box) and type in your information.

Step 1 Fill in the name and identifying information.

Step 2 Enter the horsepower of the engine. Every engine gets a calculaton sheet. This calculation will select the correct set of emission factors, from the table below based on the engine horsepower. As you can see the emissions are different for small and large engines so it is important not to total the horsepower for the site and then use the one number for an emission estimate. If you have several engines, then you will be doing a calculation for each.

Step 3 Enter the sulfur content of the fuel being used . If the fuel is on road diesel then the sulfur content is 0.05%. If you are contracting the fuel, check your contract. Off road diesel is 0.5 %. If the sulfur is 0.05%, then enter 0.05 in the box. The sulfur dioxide emission for engines larger than 600 HP use the sulfur content of the fuel to estimate the emission.

Step 4 Enter your hours of operation.
Remember to make some reasonable assumptions for operating hours for the equipment. A company maybe open 8 hours a day but only operate equipment 4-6 hours a day.

Step 5 Once you have entered in all the values click anywhere (or push 'Enter') and the calculation will be done. Remember the information is being used for permitting purposes, so be sure the numbers are right and realistic.

Step 6 If this is the only piece of equipment you are done with the calculations.
Save a copy by printing out the page and do a 'save as' and rename the file to keep an electronic copy. You now need to determine what type of permit you need . .. . .

Step 7 If this is one of several emission points download the Air Emission Summary page and enter the equipment name and emissions.

Emission Factors - Reciprocating Engines	Less Than 600HP (lb/hp-hr)	Greater Than or Equal to 600HP (lb/hp-hr)
Particulate Material - PM_{10}	0.0022	0.0007
Sulfur Dioxide - SO2	0.00205	0.0004045
Nitrogen Oxides - NO_x	0.031	0.024
Volitile Organic Compounds - VOC	0.002514	0.000705
Carbon Monoxide - CO	0.00668	0.0055

Emission factors are from EPA AP 42, 3.3 Gasoline and Diesel Industrial Engines & 3.4 Large Stationary Diesel and All Stationary Dual-Fuel Engines 10/96. If you have manufacturers emission rates you may use them. Please include the manufacturers literature as a reference for why you are using different factors. Emission factors used could become a permit condition, and the Division of Air Quality can ask for a test to confirm emissions.